A detailed 3D rendering of a SARS-CoV-2 virus particle, showing its spherical shape and the dense covering of spike proteins (S-glycoproteins) on its surface. The particle is rendered in a blueish-purple hue. It is positioned in the center-left of the frame, partially overlapping a large, faint, light purple circular graphic that spans the background. The background itself is a light, hazy blue with several other out-of-focus virus particles scattered around. On the right side of the image, there is a solid light purple vertical band. The title text is centered horizontally across the middle of the image, overlapping the virus particle and the purple band.

SARS-CoV-2 Vaccines

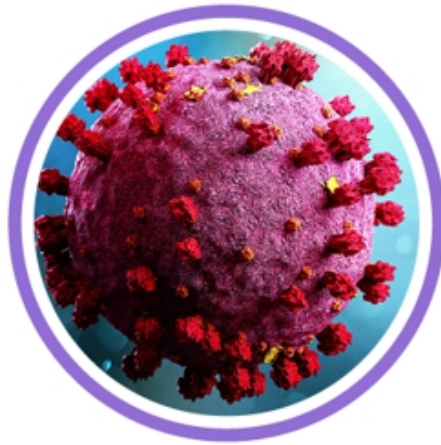
The logo for Creative Biolabs is located in the bottom-left corner. It consists of a solid purple circle with a white border. Inside the circle, the word "Creative" is written in a white, sans-serif font, and the word "Biolabs" is written below it in a similar font. To the left of the text is a stylized white icon of a plant or leaf with three main branches.

**Creative
Biolabs**

Contents



SARS-CoV-2
Introduction



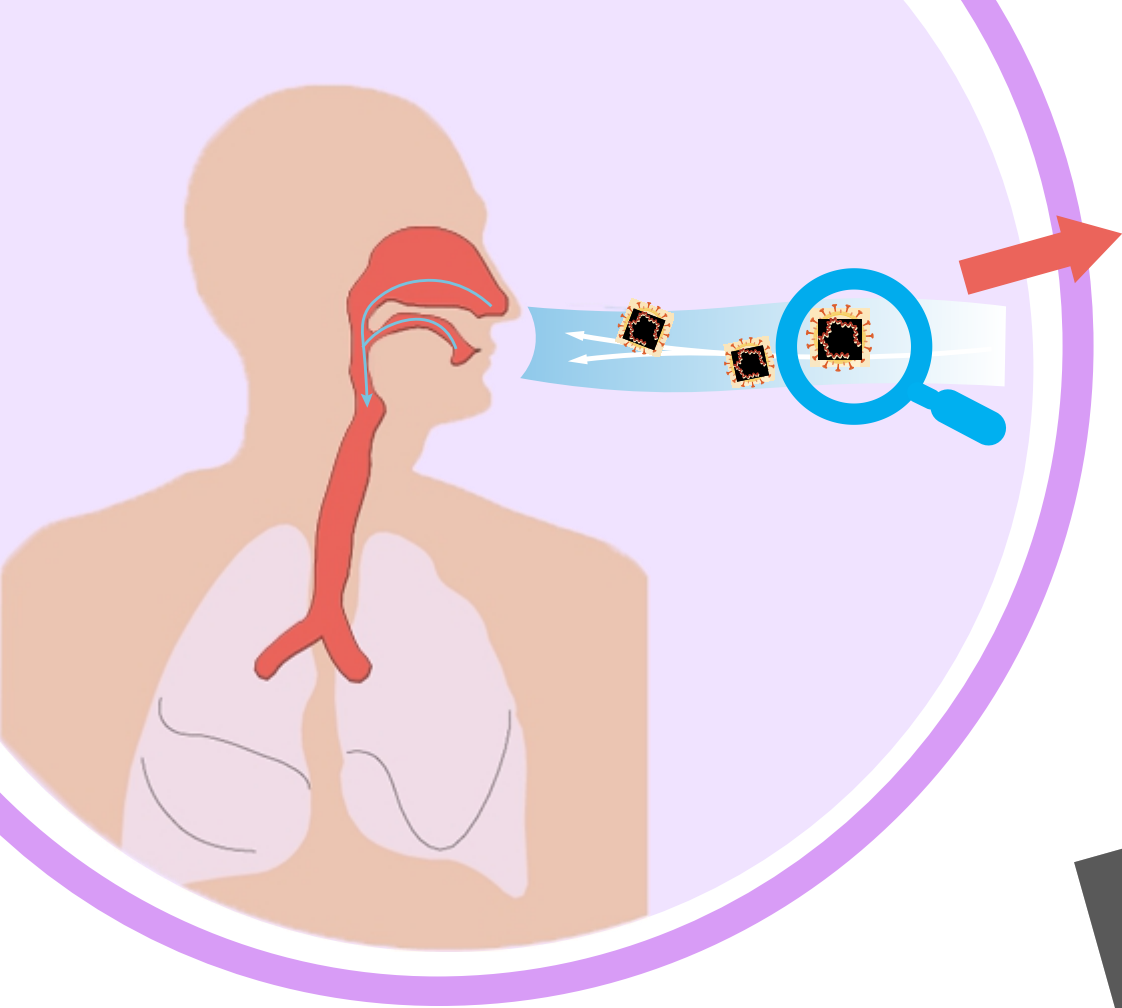
SARS-CoV-2
Vaccines
Introduction



SARS-CoV-2
Vaccine Pipeline

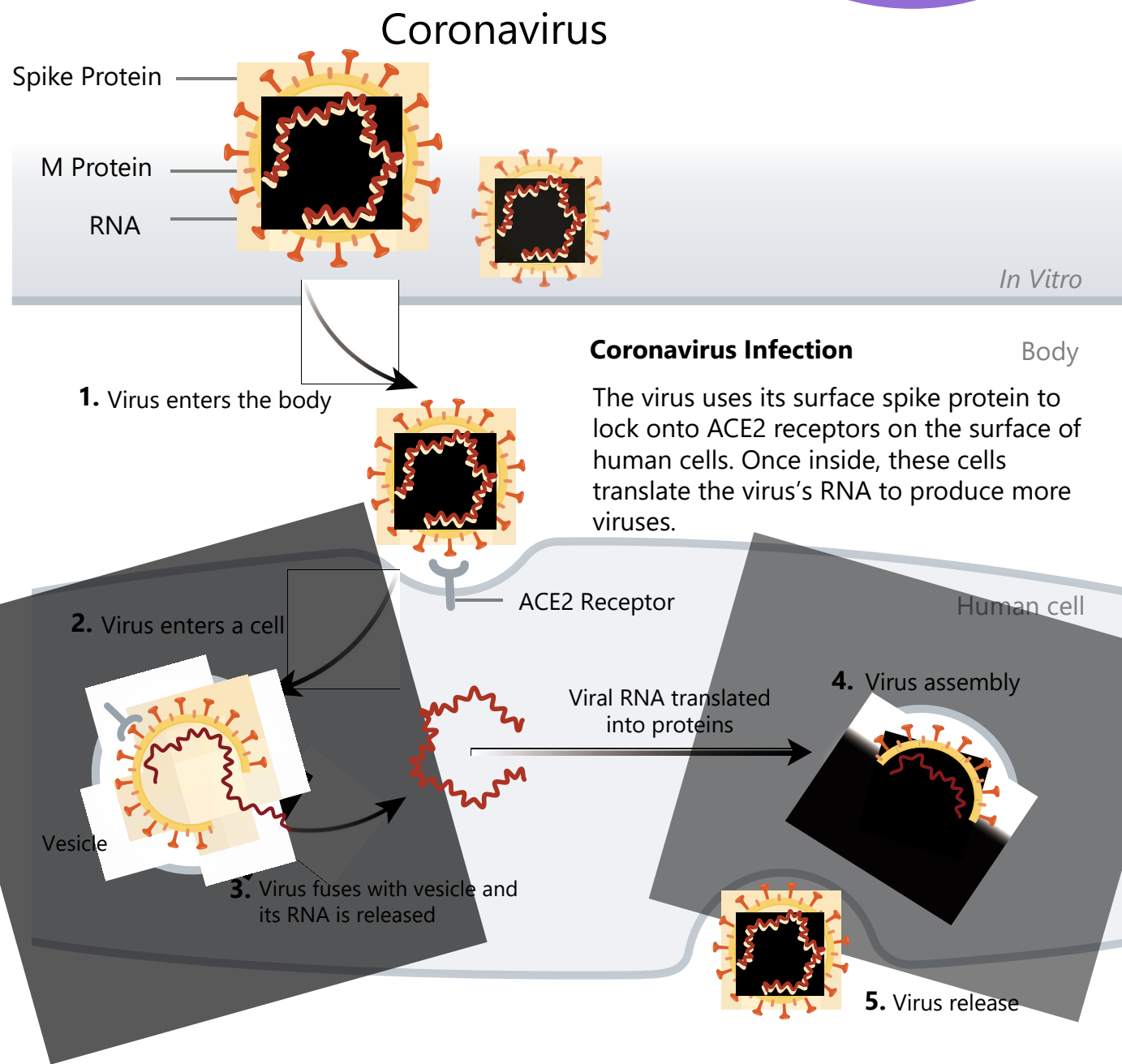


Creative Biolabs'
Services



SARS-CoV-2 Introduction

- Virus Infection

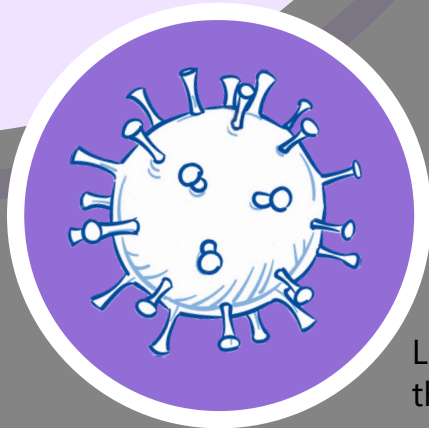


SARS-CoV-2 Introduction - Immune Response

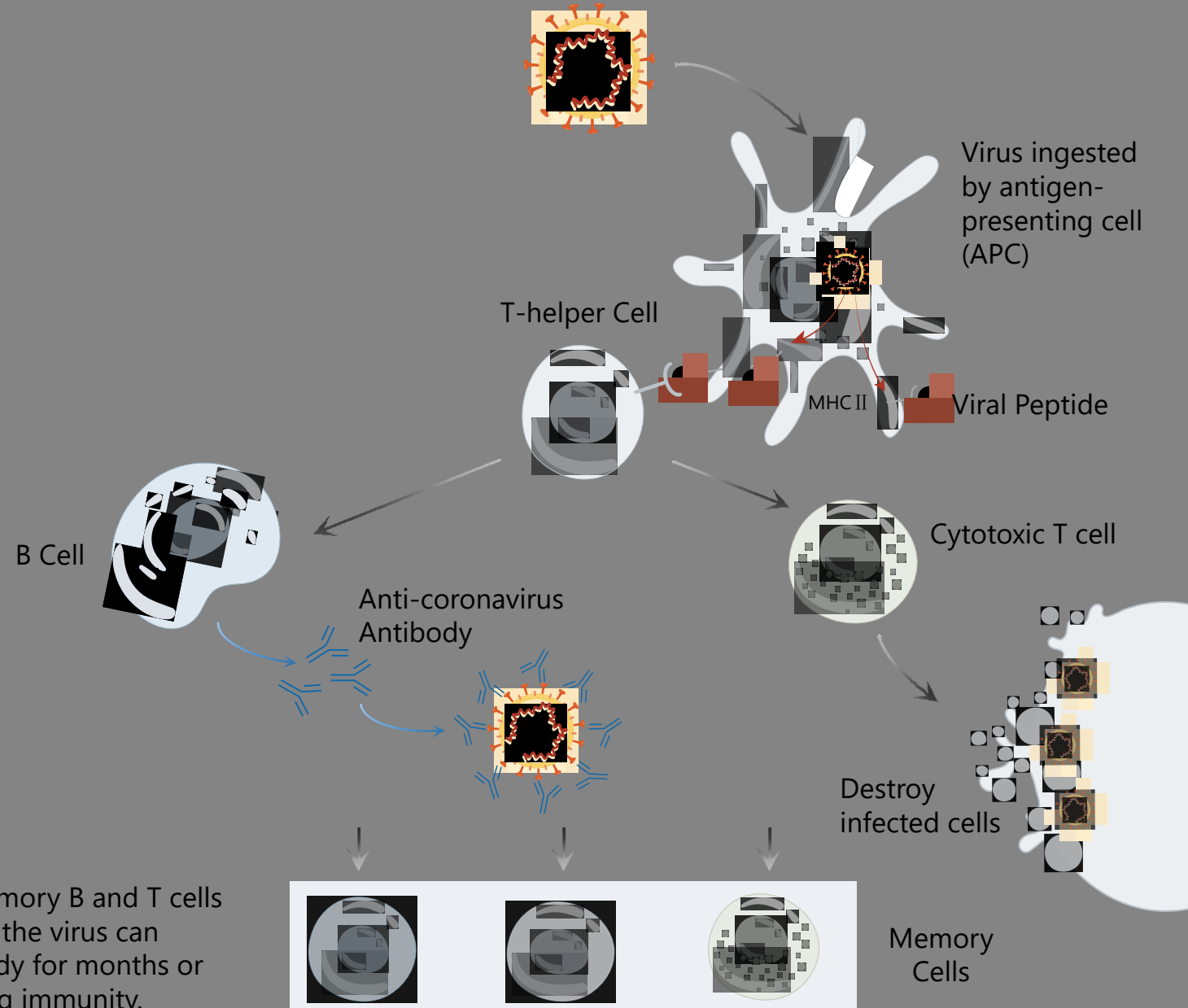
Immune response

Specialized antigen-presenting cells engulf the virus and display portions of it to activate T-helper cells.

T-helper cells enable other immune responses: B cells make antibodies that can block the virus from infecting cells, as well as mark the virus for destruction. Cytotoxic T cells identify and destroy virus-infected cells.

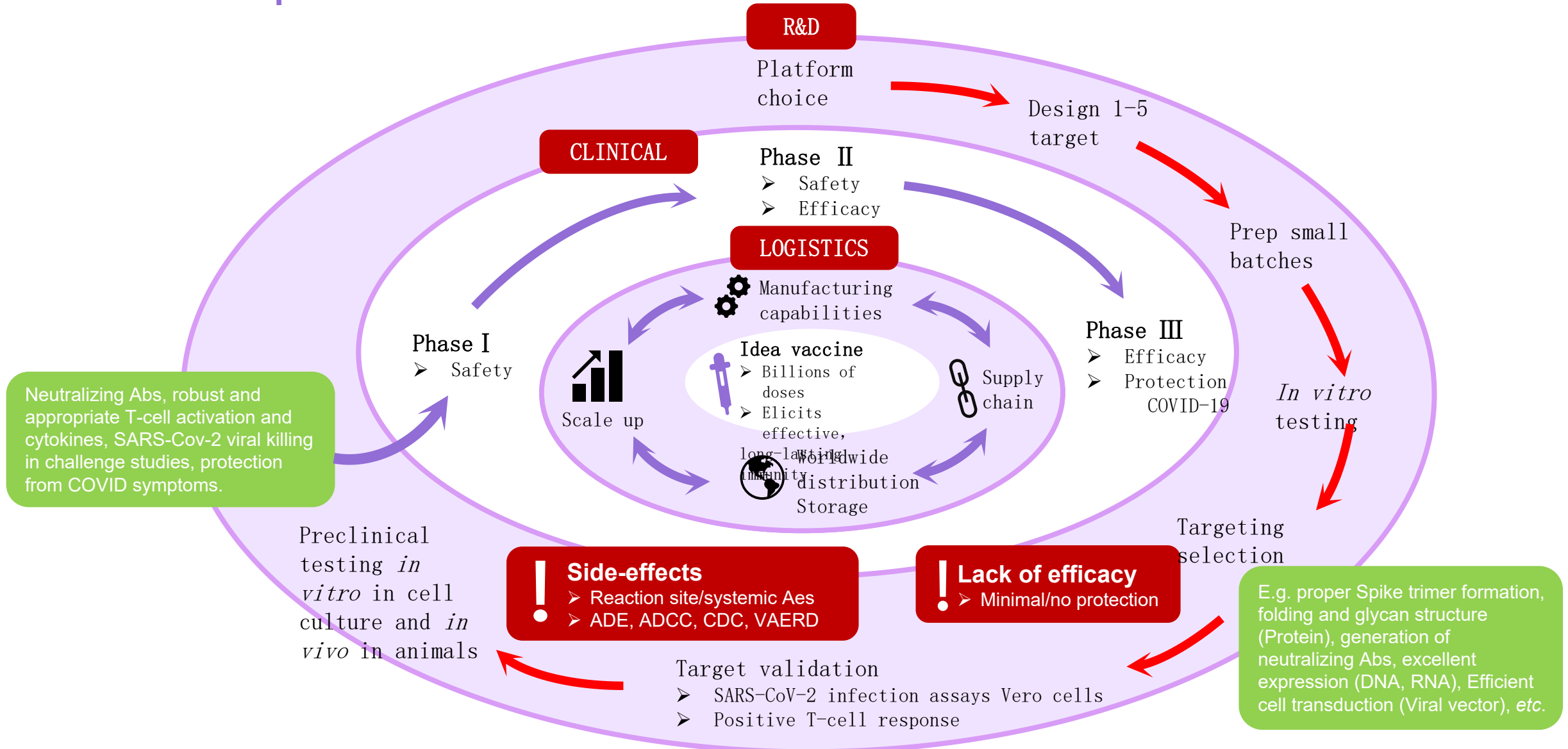


Long-lived memory B and T cells that recognize the virus can protect the body for months or years, providing immunity.



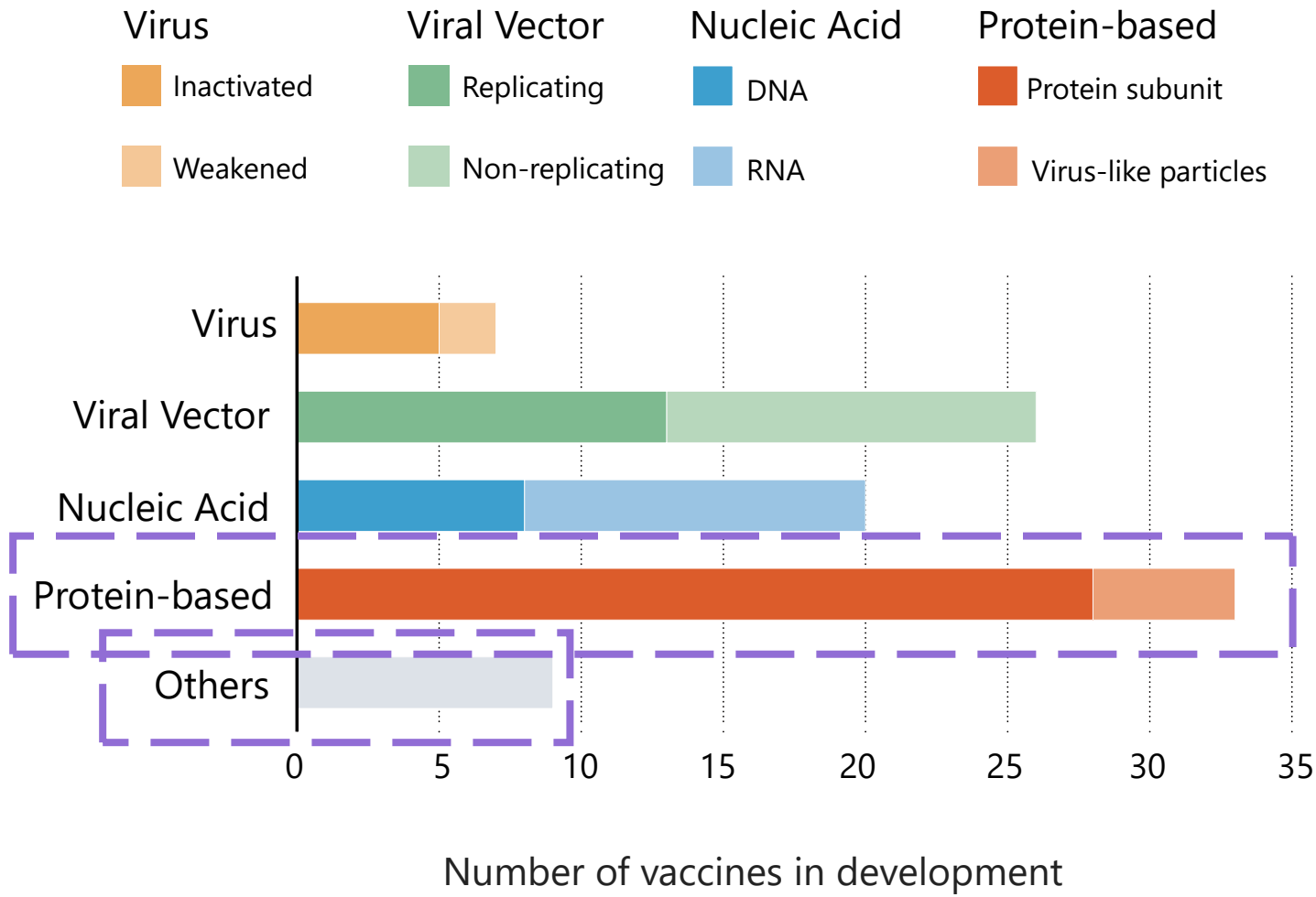
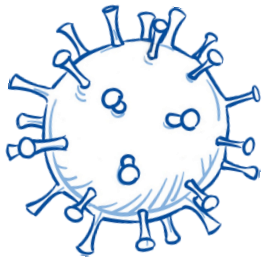
SARS-CoV-2 Vaccines Introduction

- Vaccine Development



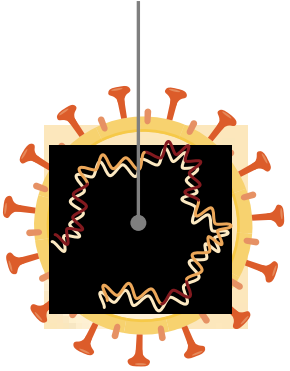
SARS-CoV-2 Vaccines

Introduction - Vaccine Types

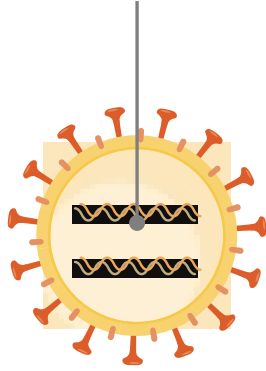


All vaccines aim to expose the body to an antigen that won't cause disease, but will provoke an immune response that can block or kill the virus if a person becomes infected. There are at least eight types being developed against the coronavirus, and they are based on different viruses or viral parts.

Weakened Virus

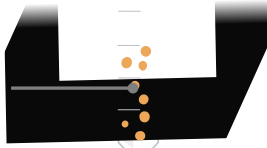


Inactivated Virus



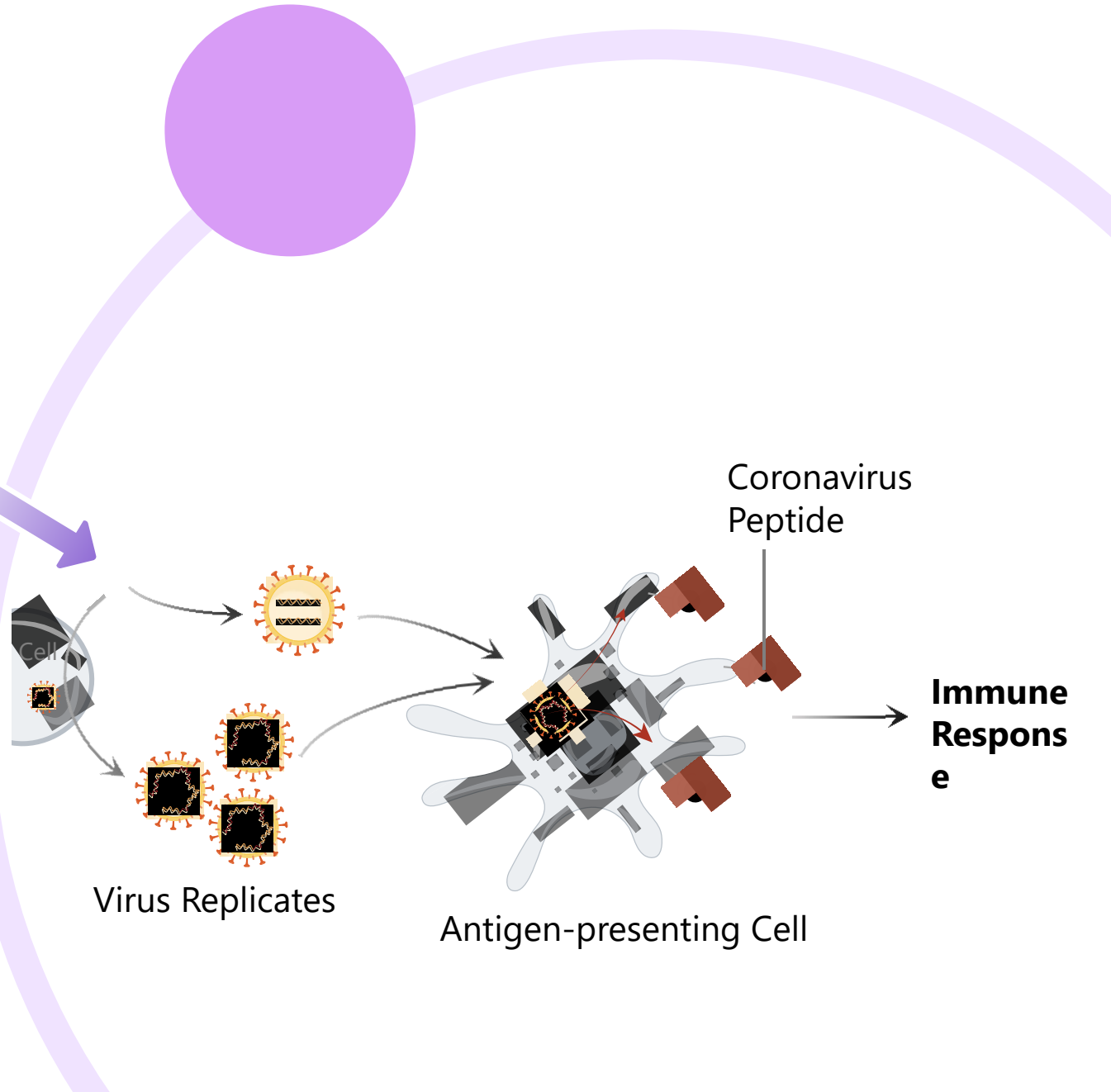
or

Vaccine

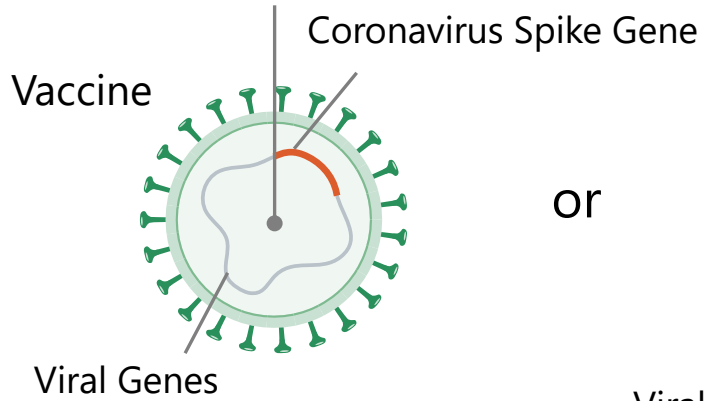


SARS-CoV-2 Vaccines Introduction

- Virus Vaccines

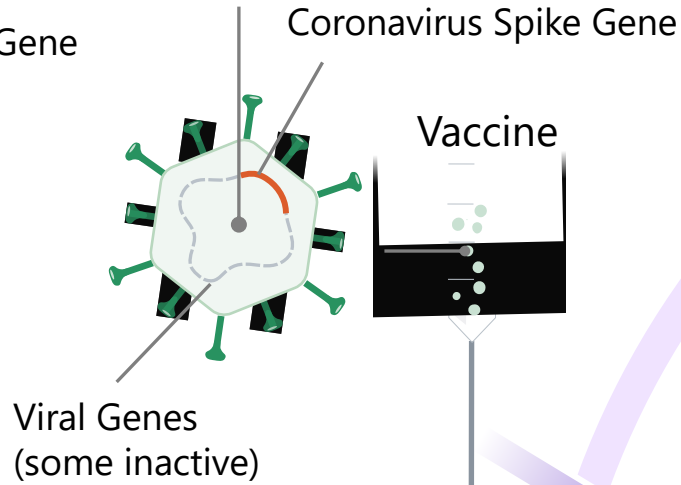


Replicating Viral Vector



Replicating Viral Vector
(such as Weakened Measles)

Non-replicating Viral

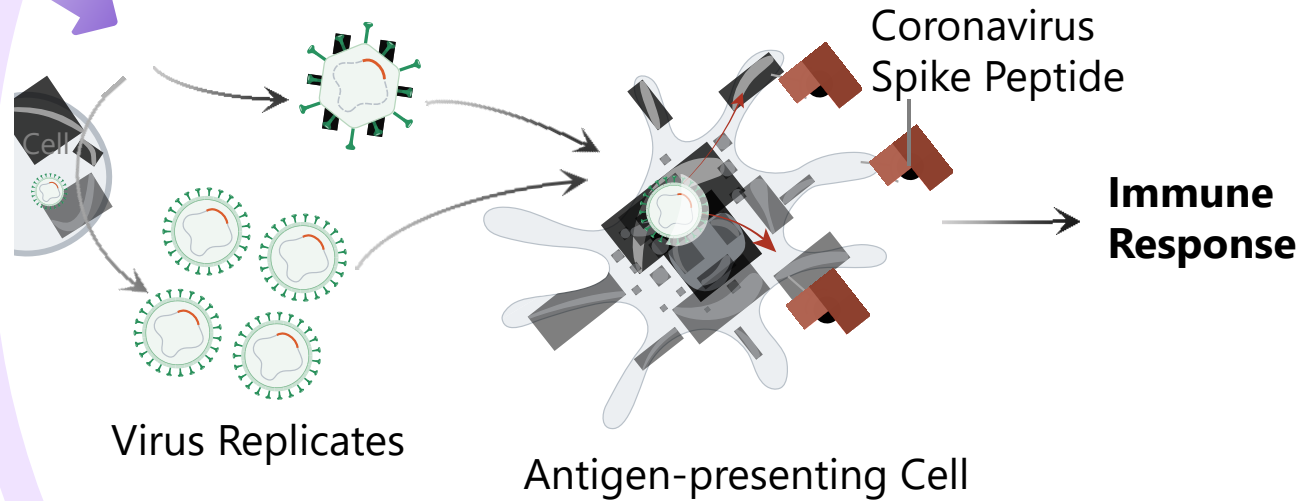


Non-replicating Viral Vector
(such as Adenovirus)



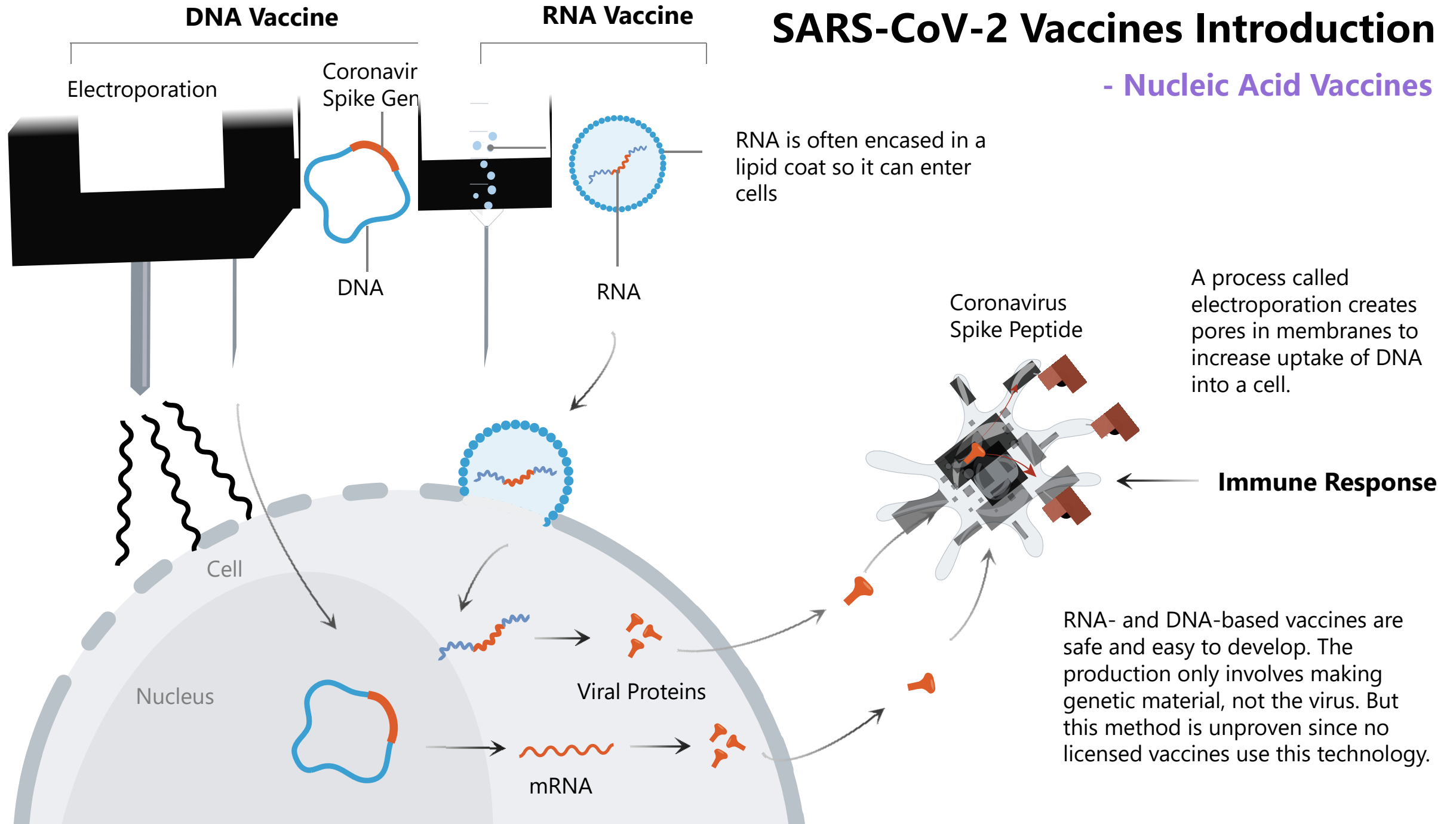
SARS-CoV-2 Vaccines Introduction

- Viral Vector Vaccines



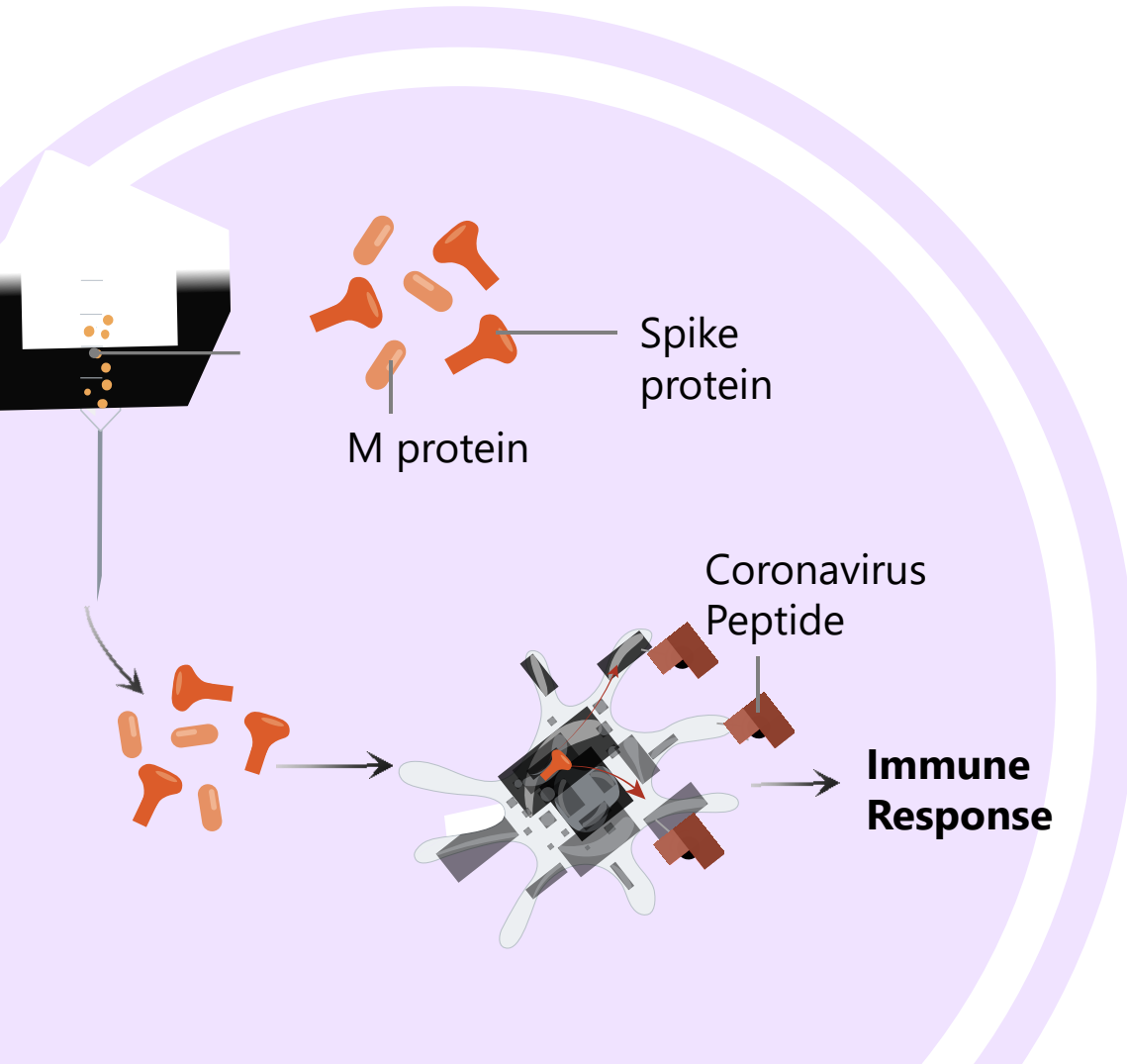
SARS-CoV-2 Vaccines Introduction

- Nucleic Acid Vaccines

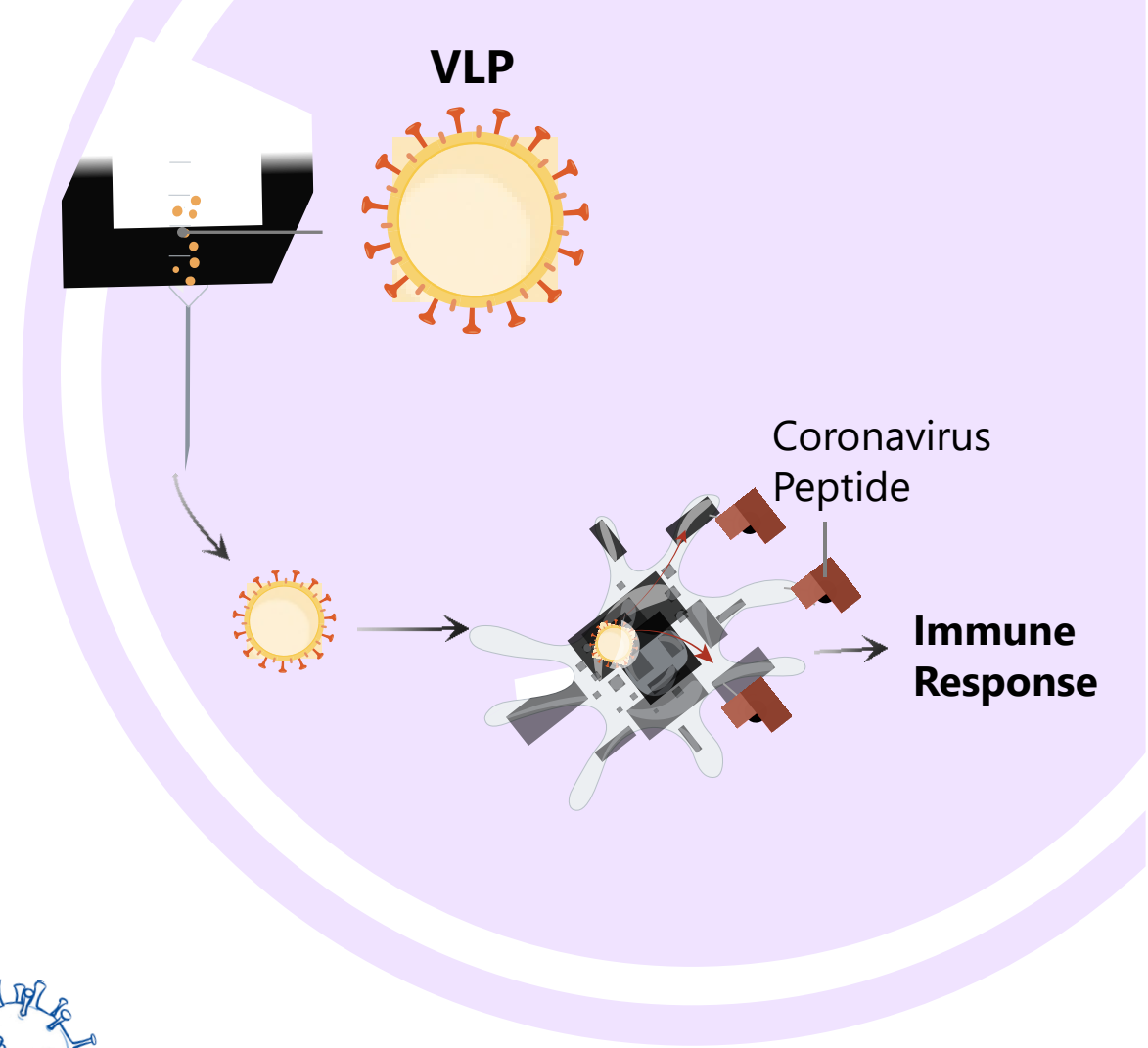
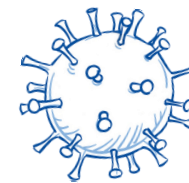


SARS-CoV-2 Vaccines Introduction

- Protein-based Vaccines



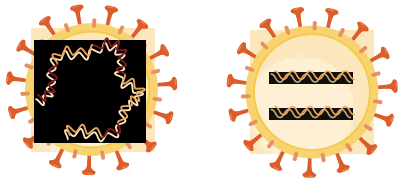
Protein Subunits



Virus-like Particles

Advantages/Disadvantages of SARS-CoV-2 Vaccines

Virus Vaccine



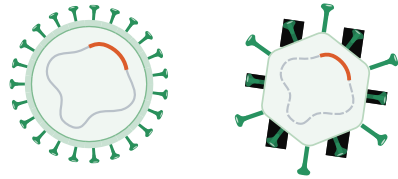
Advantages

Direct immune response
No adjuvant required
No need to purify antigen protein

Disadvantages

High storage conditions
Effectiveness and risk are not balanced

Viral Vector Vaccine



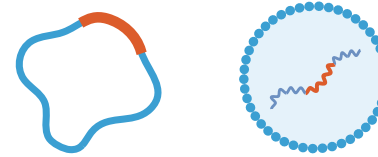
Advantages

Without adjuvant
Strong security
Strong immune response

Disadvantages

Weaken vaccine effectiveness
High transportation and storage requirements

Nucleic Acid Vaccine



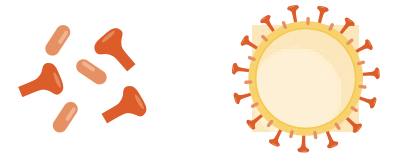
Advantages

Good stability
Security and easy development

Disadvantages

Low cost
Unknown side effects

Protein-based Vaccine



Advantages

Simple ingredients
Easy quality control

Disadvantages

Need adjuvant
Need multiple injections
Long development cycle

19
vaccines are
in clinical
testing

199
vaccines are
in development

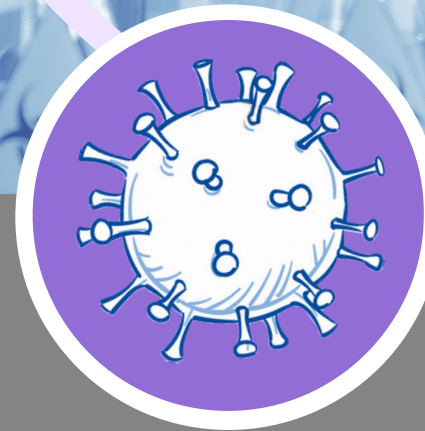


SARS-CoV-2 Vaccine Pipeline



Creative Biolabs' Services

- In Silico Vaccine Design for SARS-CoV-
- Live Attenuated and Killed Vaccine Development Services for SARS-CoV-2
- Recombinant Subunit Vaccine Development Services for SARS-CoV-2
- mRNA Vaccine Development Services for SARS-CoV-2
- Modified Vaccinia Virus Vectored Vaccine Development Services for SARS-
- CoV-2-Like Particles Based Vaccine Development Services for SARS-CoV-2
- Formulation Optimization Platform for SARS-CoV-2 Vaccine
- Analysis & Qualification Service for SARS-CoV-2 Vaccine



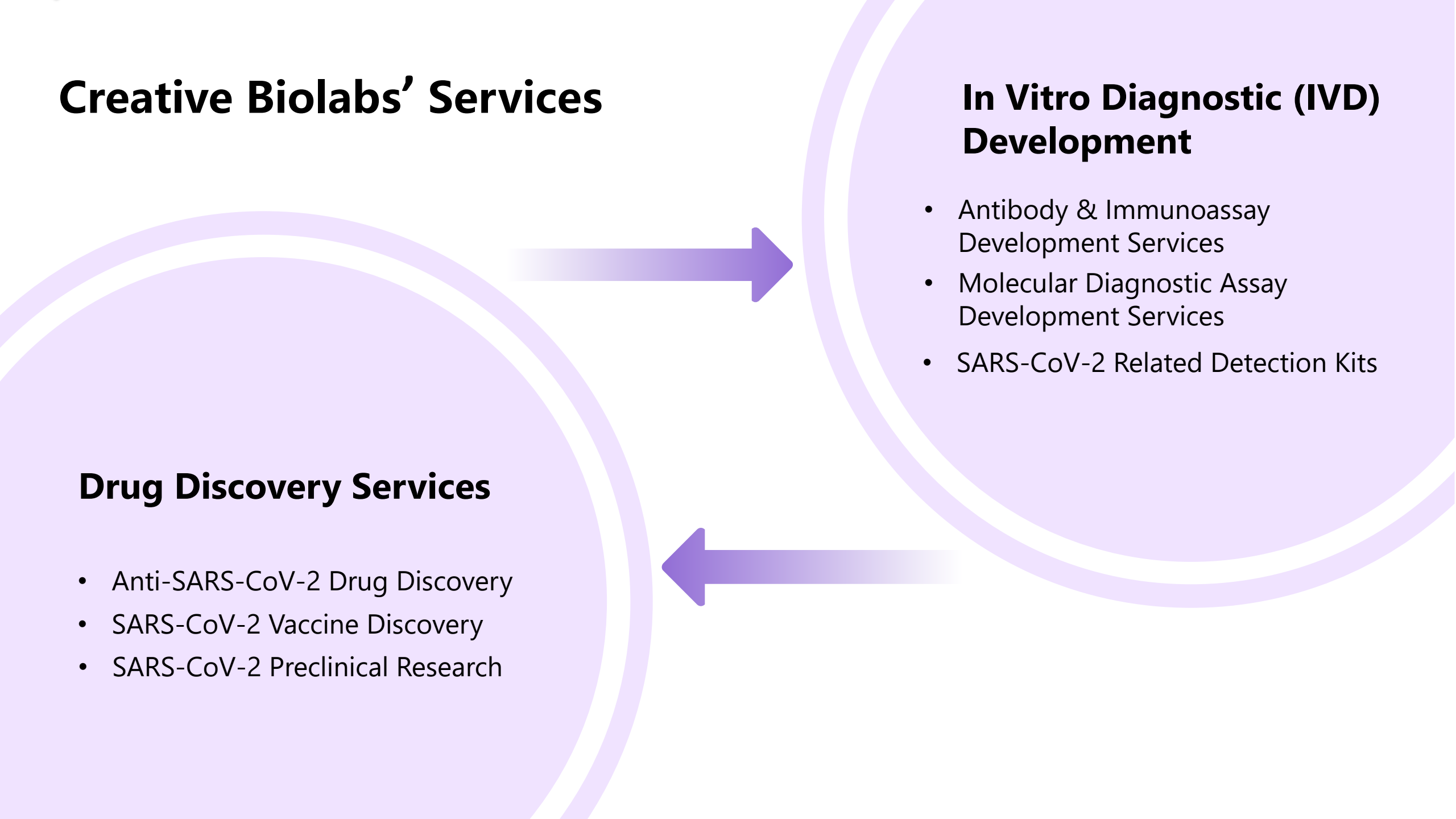
Creative Biolabs' Services

Drug Discovery Services

- Anti-SARS-CoV-2 Drug Discovery
- SARS-CoV-2 Vaccine Discovery
- SARS-CoV-2 Preclinical Research

In Vitro Diagnostic (IVD) Development

- Antibody & Immunoassay Development Services
- Molecular Diagnostic Assay Development Services
- SARS-CoV-2 Related Detection Kits





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